

TRANSISTOR REFERENCE CHART

FOR

**IN-CIRCUIT TRANSISTOR TESTER
MODEL 1890M**

The HICKOK ELECTRICAL INSTRUMENT CO.

10514 DUPONT AVENUE

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CLEVELAND 8, OHIO

USE OF TRANSISTOR REFERENCE CHART

The Transistor Reference Chart is to be used as a guide in evaluating the quality of transistors. In an effort to simplify the Chart as much as possible, only the pertinent information necessary for testing is given. For any additional information the transistor manufacturer's literature should be consulted.

In an effort to explain the use of the Transistor Reference Chart each column of the chart will be described.

Type

This column specifies the type of transistor PNP or NPN. The Type Selector switch should be set accordingly.

Max. I_{CBO}

This column specifies the maximum allowable leakage current. If the leakage current of the transistor under test exceeds this value it can be considered out of tolerance, or defective. The Collector Voltage used for this test should be 4.5V. This test must be performed out of circuit. See ICBO test procedure under Operating Instructions.

V_{CE}

This is the Collector to Emitter voltage specified for the Beta test In or Out of Circuit. The Collector Voltage Selector Switch should be set accordingly.

I_C

This column gives the I_C current in milliamperes. The Beta Test should be made at or near this level. The I_C control adjusts this level when the Function Selector is set to the I_C position. This adjustment can be made In or Out of Circuit.

Beta

Beta values are given in three columns -- Minimum, Typical and Maximum. In some cases only Typical Values are listed. This is because the Transistor Manufacturer only lists the Typical Value in his specification sheets.

Notes

Notes 1 thru 8 are listed in the beginning of the Transistor Reference Chart. These notes are self explanatory and used in specific cases where deviation from conventional test procedure is required.

TRANSISTOR REFERENCE CHART

NOTES:

- Note 1. Perform "Ices" test. Short emitter and base binding posts and test as for "Icbo". Remove jumper for "Beta" test.
- Note 2. Perform "Icer" test. Reverse the emitter and base leads. Connect a 30Ω resistor between the emitter and base terminals.
- Note 3. Perform "Icer" test. Reverse the emitter and base leads. Connect a 200Ω resistor between the emitter and base terminals.
- Note 4. Perform "Icer" test. Reverse the emitter and base leads. Connect a $10K\Omega$ resistor between the emitter and base terminals.
- Note 5. Connect B1 and B2 to the base terminal and test as triode.
- Note 6. Indicated value for "Icbo" is typical not maximum.
- Note 7. Set Collector Volts (V_{cb}) to 1.5.
- Note 8. Set Collector Volts (V_{cb}) to 3.0.

Transistor	Type	Max. Icbo μa	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N29	NPN	5	4.5	1.0		49		
2N34	PNP	16	4.5	1.0		75		
2N35	NPN	16	4.5	1.0		75		
2N43	PNP	5	4.5	1.0	30	42		
2N43A	PNP	5	4.5	1.0	30	42	66	
2N44	PNP	5	4.5	1.0		25		
2N44A	PNP	5	4.5	1.0		25		
2N45	PNP	5	4.5	1.0		25		
2N47	PNP	3	4.5	1.0		39		Note 6
2N49	PNP	3	4.5	1.0		39		Note 6
2N59	PNP	7	4.5	10		65		
2N59A	PNP	7	4.5	10		110		
2N59B	PNP	7	4.5	10		110		
2N59C	PNP	7	4.5	10		110		
2N60	PNP	7	4.5	10		90		
2N60A	PNP	7	4.5	10		90		
2N60B	PNP	7	4.5	10		90		
2N60C	PNP	7	4.5	10		90		
2N61	PNP	7	4.5	10		50		
2N61A	PNP	7	4.5	10		50		
2N61B	PNP	7	4.5	10		50		
2N61C	PNP	7	4.5	10		50		
2N63	PNP	6	4.5	1.0		22		
2N64	PNP	6	4.5	1.0		45		

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N65	PNP	5	4.5	1.0		90		Note 6
2N68	PNP	2.5ma	4.5	100		35		Note 3
2N77	PNP	4	4.5	0.7		55		
2N78	NPN	1.5	4.5	1.0	32	58	200	
2N94	NPN	25	4.5	1.0	19	40		Note 4
2N94A	NPN	25	4.5	1.0	19	40		Note 4
2N95	NPN	2.5ma	4.5	100		35		Note 3
2N97	NPN	2	4.5	0.5		13		
2N97A	NPN	2	4.5	0.5		13		
2N98	NPN	10	4.5	1.0		40		
2N98A	NPN	10	4.5	1.0		40		
2N99	NPN	10	4.5	1.0		40		
2N101	PNP	2.5ma	4.5	100		35		Note 3
2N102	NPN	2.5ma	4.5	100		35		Note 3
2N104	PNP	6	4.5	1.0		44		
2N105	PNP	4	4.5	0.7		55		
2N106	PNP	12	4.5	0.5	25			Note 8
2N107	PNP	6	4.5	1.0		20		
2N109	PNP	6	1.5	50		60		
2N111	PNP	1	4.5	1.0		40		Note 6
2N112	PNP	1	4.5	1.0		40		Note 6
2N113	PNP	1	4.5	1.0		45		Note 6
2N114	PNP	1	4.5	1.0		65		Note 6
2N117	NPN	0.5	4.5	0.5		10		
2N118	NPN	0.5	4.5	1.0		20		
2N118A	NPN	0.5	4.5	1.0		50		
2N119	NPN	0.5	4.5	1.0		63		
2N120	NPN	0.5	4.5	1.0		100		
2N123	PNP	3	4.5	1.0		90		
2N125	NPN	2	4.5	1.0		36		
2N126	NPN	2	4.5	1.0		74		
2N128	PNP	3	3.0	0.5	19	40	66	Note 8
2N129	PNP	3	3.0	0.5	11	21	39	
2N130A	PNP	6	4.5	1.0		22		
2N131A	PNP	6	4.5	1.0		45		
2N132A	PNP	6	4.5	1.0		90		
2N133A	PNP	6	4.5	1.0		50		
2N135	PNP	5	4.5	1.0		20		
2N136	PNP	5	4.5	1.0		40		
2N137	PNP	5	4.5	1.0		60		
2N138	PNP	6	4.5	1.0		140		
2N139	PNP	4	4.5	1.0		48		
2N140	PNP	4	4.5	0.6		48		
2N141	PNP	2ma	1.5	100		15		Note 3
2N142	NPN	2ma	1.5	100		15		Note 3
2N143	PNP	2ma	1.5	100		15		Note 3
2N144	NPN	2ma	1.5	100		15		Note 3
2N145	NPN	3	4.5	1.0	30			
2N146	NPN	3	4.5	1.0	33			
2N147	NPN	3	4.5	1.0	36			
2N156	PNP	400	1.5	100		55		
2N158	PNP	300	1.5	100		45		
2N158A	PNP	250	1.5	100		45		

Transistor	Type	Max. I _{cho} , μa	V _{ce}	I _c ma	Beta			Notes
					Min.	Typ.	Max.	
2N160	NPN	5	4.5	0.5	10			
2N160A	NPN	5	4.5	0.5	10			
2N161	NPN	5	4.5	1.0		24		
2N161A	NPN	5	4.5	1.0		24		
2N162	NPN	5	4.5	1.0		39		
2N162A	NPN	5	4.5	1.0		39		
2N163	NPN	5	4.5	1.0	39			
2N163A	NPN	5	4.5	1.0	39			
2N167	NPN	0.8	4.5	1.0	20	66	200	
2N168A	NPN	0.5	4.5	1.0		40		Note 6
2N169	NPN	0.5	1.5	1.0		72		Note 6
2N169A	NPN	2.5	4.5	1.0		50		
2N170	NPN	5	4.5	1.0		20		
2N175	PNP	5	4.5	0.5		65		
2N185	PNP	7	4.5	2.0		40		
2N186	PNP	6	1.5	50		30		
2N186A	PNP	6	1.5	50		30		
2N187	PNP	6	1.5	50		45		
2N187A	PNP	6	1.5	50		45		
2N188	PNP	6	1.5	50		60		
2N188A	PNP	6	1.5	50		60		
2N189	PNP	6.5	4.5	1.0		24		
2N190	PNP	6.5	4.5	1.0		36		
2N191	PNP	6.5	4.5	1.0		54		
2N192	PNP	6.5	4.5	1.0		75		
2N195	PNP	3	4.5	1.0	100	180	300	Note 8
2N206	PNP	4	4.5	1.0		47		
2N207	PNP	9	4.5	1.0	35	100		
2N207A	PNP	6	4.5	1.0	35	100		
2N207B	PNP	6	4.5	1.0	35	100		
2N211	NPN	13	4.5	1.0	10			Note 4
2N212	NPN	25	4.5	1.0		20		Note 4
2N213	NPN	16	4.5	1.0	70			
2N213A	NPN	16	4.5	1.0	100	150		
2N214	NPN	15	1.5	35		60		
2N214MP	NPN	Matched pair of 2N214						
2N215	PNP	4	4.5	1.0		44		
2N216	NPN	25	4.5	1.0		45		Note 4
2N217	PNP	6	1.5	50		60		
2N218	PNP	4	4.5	1.0		48		
2N219	PNP	4	4.5	0.6		48		
2N220	PNP	5	4.5	0.5		65		
2N223	PNP	14	4.5	2.0	70	110	150	
2N224	PNP	15	4.5	10		80		
2N225	PNP	Pair of 2N224 with Beta matched to within 20%						
2N226	PNP	10	4.5	10		70		
2N227	PNP	Pair of 2N226 with Beta matched to within 20%						
2N229	NPN	65	4.5	1.0	25	75		Note 4
2N232	PNP	6	3.0	0.5	9		39	
2N233	NPN	33	4.5	1.0	10			Note 4
2N233A	NPN	25	4.5	1.0	10			Note 4
2N238	PNP	10	4.5	2.0		40		
2N240	PNP	10	3.0	0.5	16	30		
2N241	PNP	6	1.5	50		70		
2N241A	PNP	6	1.5	50		70		

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N243	NPN	0.4	4.5	10		15		
2N244	NPN	0.4	4.5	10		40		
2N247	PNP	6	4.5	1.0		55		
2N248	PNP	10	4.5	0.5		20		
2N265	PNP	6.5	4.5	1.0		110		
2N269	PNP	3	1.5	24		24		
2N274	PNP	7	4.5	1.0		60		
2N279	PNP	12	1.5	0.5	20	30	40	
2N280	PNP	12	4.5	1.0	30	47	82	
2N281	PNP	6	4.5	10		70		
2N282	PNP	Pair of 2N281 with Beta matched to within 30%						
2N283	PNP	6	4.5	1.0		40		
2N284	PNP	6	4.5	10	47			
2N284A	PNP	6	4.5	10	47			
2N292	NPN	0.5	4.5	1.0		25		Note 6
2N293	NPN	0.5	4.5	1.0		25		Note 6
2N299	PNP	3	3.0	0.5	11	18	33	
2N300	PNP	3	3.0	0.5		18		
2N306	NPN	25	4.5	1.0	16	75		
2N311	PNP	25	1.5	10		50		
2N312	NPN	3	1.5	10		50		Note 7
2N315	PNP	2	1.5	50		25		
2N315A	PNP	2	4.5	1.0		70		
2N316	PNP	2	1.5	50		50		
2N316A	PNP	2	4.5	1.0		130		
2N317	PNP	2	1.5	50		120		
2N317A	PNP	2	4.5	1.0	100	200		
2N322	PNP	8	4.5	1.0		45		
2N323	PNP	8	4.5	1.0		68		
2N324	PNP	8	4.5	1.0	40	85		
2N327A	PNP	.04	4.5	3.0		14		
2N328A	PNP	.04	4.5	3.0		28		
2N329A	PNP	.04	4.5	3.0		60		
2N330	PNP	.05	4.5	1.0	9	30	72	
2N331	PNP	6	4.5	1.0	30	50	70	
2N332	NPN	0.8	4.5	1.0	9	15	22	
2N332A	NPN	0.2	4.5	0.5	9	16	22	
2N333	NPN	0.8	4.5	1.0	18	30	44	
2N333A	NPN	0.2	4.5	1.0	18	30	44	
2N334	NPN	0.8	4.5	1.0	18	39	90	
2N334A	NPN	0.2	4.5	1.0	18	38	90	
2N335	NPN	0.8	4.5	1.0	36	60	90	
2N335A	NPN	0.2	4.5	1.0	37	52	90	
2N336	NPN	0.8	4.5	1.0	76	120		
2N336A	NPN	0.2	4.5	1.0	76	95		
2N337	NPN	0.5	4.5	1.0	19	55		
2N338	NPN	0.5	4.5	1.0	39	99		
2N339	NPN	0.4	4.5	10	10			
2N340	NPN	0.4	4.5	10	10			
2N341	NPN	0.4	4.5	10	10			
2N342	NPN	0.4	4.5	10	10			
2N342A	NPN	0.4	4.5	10	10			
2N343	NPN	0.4	4.5	10	25			
2N344	PNP	3	3.0	0.5	11	22	33	
2N345	PNP	3	3.0	0.5	25	35	110	

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N346	PNP	3	3.0	0.5	10	20	35	
2N354	PNP	0.1	4.5	1.0	9	18		
2N355	PNP	0.1	4.5	1.0	9	18		
2N356	NPN	5	4.5	1.0		30		
2N356A	NPN	5	4.5	1.0		60		
2N357	NPN	5	4.5	1.0		45		
2N357A	NPN	5	4.5	1.0		90		
2N358	NPN	5	4.5	1.0		60		
2N358A	NPN	5	4.5	1.0		120		
2N359	PNP	9	4.5	1.0		150		
2N360	PNP	9	4.5	1.0		100		
2N361	PNP	9	4.5	1.0		70		
2N362	PNP	9	4.5	1.0		120		
2N363	PNP	9	4.5	1.0		50		
2N364	NPN	4	4.5	1.0		15		
2N365	NPN	4	4.5	1.0		26		
2N366	NPN	4	4.5	1.0		65		
2N367	PNP	8	4.5	1.0		15		
2N368	PNP	8	4.5	1.0		36		
2N369	PNP	8	4.5	1.0		55		
2N370	PNP	12	4.5	1.0		55		
2N371	PNP	12	4.5	1.0		55		
2N372	PNP	12	4.5	1.0		55		
2N373	PNP	5	4.5	1.0		55		
2N374	PNP	5	4.5	1.0		55		
2N377	NPN	10	1.5	30		30		
2N381	PNP	6	4.5	10	35	60	85	
2N382	PNP	6	4.5	10	70	90	135	
2N383	PNP	6	4.5	10	90	115	135	
2N384	PNP	7	4.5	1.5	20	60	175	
2N385	NPN	4	1.5	30		60		
2N385A	NPN	4	1.5	30		60		
2N388	NPN	5	1.5	30		100		Note 7
2N388A	NPN	5	1.5	30		100		Note 7
2N393	PNP	5	3.0	0.5	40	155		
2N394	PNP	4	1.5	10		70		
2N395	PNP	3	1.5	10		60		
2N396, A	PNP	3	1.5	10		80		
2N397	PNP	4	1.5	10		85		
2N398	PNP	14	1.5	5.0		60		Note 8
2N398A	PNP	14	1.5	5.0		60		
2N402	PNP	7	4.5	1.0		20		
2N403	PNP	7	4.5	1.0		32		
2N404	PNP	3	1.5	24		24		
2N405	PNP	8	4.5	1.0		35		
2N406	PNP	8	4.5	1.0		35		
2N407	PNP	8	1.5	50		60		
2N408	PNP	8	1.5	50		60		
2N409	PNP	6	4.5	1.0		48		
2N410	PNP	6	4.5	1.0		48		
2N411	PNP	6	4.5	0.6		75		
2N412	PNP	6	4.5	0.6		75		
2N413	PNP	3	4.5	1.0	20	30		

Transistor	Type	Max. Icbo	Vce	Ic ma	Beta			Notes
		μ a			Min.	Typ.	Max.	
2N413A	PNP	3	4.5	1.0		25		
2N414	PNP	3	4.5	1.0	30	60	120	
2N414A	PNP	3	4.5	1.0		60		
2N416	PNP	3	4.5	1.0	50	80	200	
2N417	PNP	3	4.5	1.0	70	140		
2N422	PNP	7	4.5	1.0		50		
2N425	PNP	4	1.5	30		30		Note 7
2N426	PNP	4	1.5	40		40		Note 7
2N427	PNP	4	1.5	55		55		Note 7
2N428	PNP	4	1.5	4.0		100		Note 7
2N438	NPN	4	4.5	1.0	15	25		
2N438A	NPN	4	4.5	1.0	15	25		
2N439	NPN	4	4.5	1.0	15	35		
2N439A	NPN	4	4.5	1.0	15	35		
2N440	NPN	4	4.5	1.0	15	65		
2N440A	NPN	4	4.5	1.0	15	65		
2N444	NPN	4	4.5	1.0	10	15		
2N444A	NPN	4	4.5	1.0	15	25		
2N445	NPN	4	4.5	1.0	20	35		
2N445A	NPN	4	4.5	1.0	35	70		
2N446	NPN	4	4.5	1.0	30	60		
2N446A	NPN	4	4.5	1.0	60	120		
2N447	NPN	4	4.5	1.0	50	125		
2N447A	NPN	4	4.5	1.0	85	150		
2N448	NPN	0.5	1.5	1.0	8	25	51	Note 6
2N449	NPN	0.5	1.5	1.0		72		Note 6
2N450	PNP	4	4.5	1.0		130		
2N460	PNP	3	4.5	1.0		24		
2N461	PNP	3	4.5	1.0		49		
2N464	PNP	7	4.5	1.0	14	26		
2N465	PNP	7	4.5	1.0	27	45		
2N466	PNP	7	4.5	1.0	56	90		
2N467	PNP	7	4.5	1.0	112	180		
2N470	NPN	.005	4.5	1.0	10	16	25	
2N471	NPN	.005	4.5	1.0	10	16	25	
2N471A	NPN	.005	4.5	1.0	10	16	25	
2N472	NPN	.005	4.5	1.0	10	16	25	
2N473	NPN	.005	4.5	1.0	20	30	50	
2N474	NPN	.005	4.5	1.0	20	30	50	
2N474A	NPN	.005	4.5	1.0	20	30	50	
2N475	NPN	.005	4.5	1.0	20	30	50	
2N476	NPN	.005	4.5	1.0	30	45	60	
2N477	NPN	.005	4.5	1.0	30	45	60	
2N478	NPN	.005	4.5	1.0	40	60	100	
2N479	NPN	.005	4.5	1.0	40	60	100	
2N479A	NPN	.005	4.5	1.0	40	60	100	
2N480	NPN	.005	4.5	1.0	40	60	100	
2N480A	NPN	.005	4.5	1.0	40	60	100	
2N481	PNP	6	4.5	1.0		50		
2N482	PNP	6	4.5	1.0		50		
2N483	PNP	6	4.5	1.0		60		
2N484	PNP	6	4.5	1.0		90		
2N485	PNP	6	4.5	1.0		50		
2N486	PNP	6	4.5	1.0		100		

Transistor	Type	Max. I _{cho} μ a	V _{ce}	I _c ma	Beta			Notes
					Min.	Typ.	Max.	
2N495	PNP	0.4	4.5	1.0	9	20		
2N496	PNP	.06	1.5	15		12		
2N499	PNP	5	4.5	2.0		35		
2N501	PNP	5	4.5	2.0		40		
2N501A	PNP	5	4.5	2.0		40		
2N502	PNP	3	4.5	2.0	9	45		
2N502A	PNP	3	4.5	2.0	15	45		
2N503	PNP	3	4.5	2.0	9	45		
2N504	PNP	10	4.5	1.0		16		
2N508	PNP	8	4.5	1.0		112		
2N509	PNP	2.5	4.5	1.0		49		
2N515	NPN	25	4.5	0.5	10			Note 4
2N516	NPN	25	4.5	0.5	10			Note 4
2N517	NPN	25	4.5	0.5	10			Note 4
2N518	PNP	4	1.5	10		60		
2N519	PNP	2.5	4.5	1.0		25		Note 7
2N519A	PNP	2	4.5	1.0		25		
2N520	PNP	.5	4.5	1.0	20	40		Note 7
2N520A	PNP	2	4.5	1.0	40	100		
2N521	PNP	10	4.5	1.0		70		
2N521A	PNP	2	4.5	1.0	70	150		
2N522	PNP	10	4.5	1.0		120		
2N522A	PNP	2	4.5	1.0	100	200		
2N523	PNP	10	4.5	1.0		200		
2N523A	PNP	2	4.5	1.0	125			
2N524	PNP	4	4.5	1.0	16	30	41	
2N525	PNP	4	4.5	1.0	30	44	64	
2N526	PNP	4	4.5	1.0	44	64	88	
2N527	PNP	4	4.5	1.0	60	80	120	
2N534	PNP	5	4.5	1.0	35	100		
2N535	PNP	6	4.5	1.0	35	100	200	
2N535A	PNP	6	4.5	1.0	35	100	200	
2N535B	PNP	6	4.5	1.0	35	100	200	
2N536	PNP	6	1.5	10		150		
2N537	PNP	2.5	4.5	10	9		200	
2N541	NPN	.005	4.5	1.0	80	130	200	
2N542	NPN	.005	4.5	1.0	80	130	200	
2N543	NPN	.005	4.5	1.0	80	130	200	
2N544	PNP	2.5	4.5	1.0		55		
2N559	PNP	3	4.5	10		50		
2N560	NPN	.05	4.5	10		50		
2N563	PNP	3	4.5	1.0		25		
2N564	PNP	3	4.5	1.0		25		
2N565	PNP	3	4.5	1.0		55		
2N566	PNP	3	4.5	1.0		55		
2N567	PNP	3	4.5	1.0		100		
2N568	PNP	3	4.5	1.0		100		
2N569	PNP	3	4.5	1.0		150		
2N570	PNP	3	4.5	1.0		150		
2N571	PNP	3	4.5	1.0		200		
2N572	PNP	3	4.5	1.0		200		
2N576	NPN	5	4.5	1.0		80		Note 7
2N576A	NPN	5	4.5	1.0		80		Note 7

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N581	PNP	5	1.5	20		30		
2N582	PNP	3	1.5	20		60		
2N583	PNP	5	1.5	20		30		
2N584	PNP	3	1.5	20		60		
2N585	NPN	7	1.5	20		40		
2N591	PNP	7	4.5	2.0		70		Note 7
2N592	PNP	5	4.5	1.0		25		
2N593	PNP	5	4.5	1.0		35		
2N594	NPN	5	4.5	1.0		30		
2N595	NPN	5	4.5	1.0		45		
2N596	NPN	5	4.5	1.0		60		
2N597	PNP	5	4.5	3.0		70		Note 7
2N598	PNP	5	4.5	3.0		125		Note 7
2N599	PNP	5	4.5	3.0		175		Note 7
2N600	PNP	5	4.5	3.0		125		Note 7
2N601	PNP	5	4.5	3.0		175		Note 7
2N602	PNP	5	4.5	1.0		25		
2N603	PNP	5	4.5	1.0		50		
2N604	PNP	5	4.5	1.0		100		
2N609	PNP	12	4.5	10		110		
2N610	PNP	12	4.5	10		90		
2N611	PNP	12	4.5	10		65		
2N612	PNP	12	4.5	1.0		20		
2N613	PNP	12	4.5	1.0		32		
2N619	NPN	.04	1.5	0.5		15		
2N620	NPN	.04	4.5	1.0		30		
2N621	NPN	.04	4.5	1.0		60		
2N623	PNP	5	4.5	2.0	10	35		
2N624	PNP	10	4.5	1.0		30		
2N625	NPN	50	1.5	50		50		Note 7
2N631	PNP	9	4.5	1.0		150		
2N632	PNP	9	4.5	10		175		
2N633	PNP	9	4.5	10		60		
2N634	NPN	5	1.5	10	15			
2N634A	NPN	4	1.5	10		55		
2N635	NPN	5	1.5	10	25			
2N635A	NPN	4	1.5	10		100		
2N636	NPN	5	1.5	10	35			
2N636A	NPN	4	1.5	10		190		
2N640	PNP	3	4.5	1.0		55		
2N641	PNP	4	4.5	1.0		55		
2N642	PNP	4	4.5	1.0		55		
2N643	PNP	10	4.5	5.0		45		
2N644	PNP	10	4.5	5.0		45		
2N645	PNP	10	4.5	5.0		45		
2N647	NPN	6	1.5	50		80		
2N649	NPN	9	1.5	50		80		
2N650	PNP	4	4.5	1.0	30	49	70	
2N650A	PNP	4	4.5	1.0	30	49	70	
2N651	PNP	4	4.5	1.0	50	80	120	
2N651A	PNP	4	4.5	1.0	50	80	120	
2N652	PNP	4	4.5	1.0	100	130	225	
2N652A	PNP	4	4.5	1.0	100	130		
2N653	PNP	6	4.5	1.0	30	49	70	

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N654	PNP	6	4.5	1.0	50	80	125	
2N655	PNP	6	4.5	1.0	100	130		
2N658	PNP	3	1.5	10		50		
2N659	PNP	3	1.5	10		70		
2N660	PNP	3	1.5	10		90		
2N661	PNP	3	1.5	10		120		
2N662	PNP	3	1.5	10		70		
2N670	PNP	25	1.5	100		100		Note 7
2N671	PNP	25	1.5	100		100		Note 7
2N672	PNP	25	1.5	100		100		Note 7
2N673	PNP	25	1.5	100		100		Note 7
2N679	NPN	10	1.5	30	20			
2N694	PNP	3	4.5	2.0	9	19	200	
2N695	PNP	3	1.5	10		40		
2N696	NPN	0.4	1.5	50		30		
2N697	NPN	0.4	1.5	50		60		
2N698	NPN	0.7	4.5	1.0		35		
2N699	NPN	0.7	4.5	1.0		65		
2N700	PNP	2	4.5	2.0	4	10		
2N702	NPN	0.3	4.5	10		50		
2N703	NPN	0.3	4.5	10		70		
2N705	PNP	3	1.5	30		80		
2N706	NPN	0.3	1.5	10		40		
2N706A,B	NPN	0.3	1.5	10		40		
2N706C	NPN	.010	1.5	10		40		
2N707	NPN	2.5	4.5	10		12		
2N710	PNP	3	1.5	10	25			
2N711	PNP	3	1.5	10	20			
2N715	NPN	0.4	4.5	10		30		
2N716	NPN	0.4	4.5	10		24		
2N726	PNP	4	1.5	10		30		
2N728	NPN	2.5	4.5	10		40		
2N729	NPN	2	4.5	10		40		
2N730	NPN	0.4	4.5	50		35		
2N731	NPN	0.4	4.5	50		70		
2N734	NPN	0.3	4.5	5.0	20		50	
2N735	NPN	0.3	4.5	5.0	40		100	
2N736	NPN	0.3	4.5	5.0	80		200	
2N738	NPN	0.3	4.5	5.0	20		50	
2N739	NPN	0.3	4.5	5.0	40		100	
2N740	NPN	0.3	4.5	5.0	80		200	
2N741	PNP	3	4.5	5.0	20			
2N742	NPN	.05	1.5	10	25			
2N743	NPN	0.5	1.5	10		40		Note 1
2N744	NPN	0.5	1.5	10		80		Note 1
2N745	NPN	0.5	4.5	1.0		55		
2N746	NPN	0.5	4.5	1.0		99		
2N747	NPN	0.1	4.5	10		50		
2N748	NPN	0.1	4.5	10		25		
2N749	NPN	.25	4.5	1.0		15		
2N750	NPN	.25	4.5	1.0		15		
2N751	NPN	0.8	4.5	1.0		15		
2N752	NPN	.04	4.5	1.0	40		120	
2N753	NPN	0.3	1.5	10		80		

Transistor	Type	Max. I _{cho} μa	V _{ce}	I _c ma	Beta			Notes
					Min.	Typ.	Max.	
2N754	NPN	0.3	4.5	1.0		40		
2N755	NPN	0.2	4.5	1.0		40		
2N768	PNP	3	1.5	2.0		60		
2N769	PNP	3	1.5	10		70		
2N770	NPN	0.4	4.5	10		30		
2N771	NPN	0.4	4.5	10		60		
2N772	NPN	0.3	4.5	10		25		
2N773	NPN	0.4	4.5	2.0	5	10	16	
2N774	NPN	0.4	4.5	2.0	10	18	32	
2N775	NPN	0.4	4.5	2.0	25	44	80	
2N776	NPN	0.4	4.5	2.0	5	10	16	
2N777	NPN	0.4	4.5	2.0	10	18	32	
2N778	NPN	0.4	4.5	2.0	25	44	80	
2N779	PNP	3	1.5	10		80		
2N781	PNP	3	1.5	10	25			
2N782	PNP	3	1.5	10	20			
2N783	NPN	.10	1.5	10	20		60	
2N784	NPN	.10	1.5	10	25			
2N789	NPN	0.8	4.5	1.0	9		20	
2N790	NPN	0.8	4.5	1.0	18		40	
2N791	NPN	0.8	4.5	1.0	18		90	
2N792	NPN	0.8	4.5	1.0	36		88	
2N793	NPN	0.8	4.5	1.0	78		330	
2N799	PNP	3	1.5	24		24		
2N801	PNP	4	1.5	2.0		50		Note 7
2N803	PNP	4	1.5	2.0		80		Note 7
2N805	PNP	4	1.5	4.0		100		Note 7
2N807	PNP	3	1.5	20		60		
2N809	PNP	3	4.5	1.0		60		
2N811	PNP	3	4.5	1.0		80		
2N813	PNP	3	4.5	1.0		140		
2N815	NPN	5	1.5	30		100		Note 7
2N817	NPN	4	4.5	1.0	15	25		
2N819	NPN	4	4.5	1.0	15	35		
2N821	NPN	4	4.5	1.0	15	65		
2N823	NPN	3	1.5	24		24		
2N825	PNP	3	1.5	10		80		
2N839	NPN	0.3	4.5	1.0	20		45	
2N840	NPN	0.3	4.5	1.0	40		90	
2N841	NPN	0.3	4.5	1.0	80		330	
2N842	NPN	0.3	4.5	1.0	20			
2N843	NPN	0.3	4.5	1.0	40			
2N844	NPN	0.3	4.5	1.0		80		
2N845	NPN	0.2	4.5	1.0		80		
2N846	PNP	3	1.5	10		45		
2N858	PNP	.06	4.5	1.0	15	33	75	
2N859	PNP	.06	4.5	1.0	30	65	120	
2N860	PNP	.06	4.5	1.0	15	33	45	
2N861	PNP	.06	4.5	1.0	30	65	100	
2N862	PNP	.06	4.5	1.0	20	33	60	
2N863	PNP	.06	4.5	1.0	40	65	120	
2N864	PNP	.06	4.5	1.0	25	65	125	
2N865	PNP	.06	4.5	1.0	100	150	350	
2N902	NPN	0.8	4.5	1.0	9	15	22	

Transistor	Type	Max. I _{cho} μa	V _{ce}	I _c ma	Beta			Notes
					Min.	Typ.	Max.	
2N903	NPN	0.8	4.5	1.0	18	30	44	
2N904	NPN	0.8	4.5	1.0	18	39	90	
2N905	NPN	0.8	4.5	1.0	36	60	90	
2N906	NPN	0.8	4.5	1.0	76	120		
2N907	NPN	0.5	4.5	1.0	19	55		
2N908	NPN	0.5	4.5	1.0	39	99		
2N1000	NPN	5	1.5	10		40		
2N1008	PNP	6	4.5	10	40	90	150	
2N1008A	PNP	4	4.5	10	40	90	150	
2N1008B	PNP	15	4.5	10	40	90	150	
2N1010	NPN	7	3.0	0.3		35		
2N1012	NPN	5	1.5	50		50		
2N1017	PNP	0.4	1.5	50		150		Note 7
2N1021	PNP	150	1.5	100		80		
2N1022	PNP	150	1.5	100		80		
2N1023	PNP	7	4.5	1.5		60		
2N1024	PNP	.012	4.5	1.0	9	15		
2N1025	PNP	.012	4.5	1.0	9	15	22	
2N1026	PNP	.012	4.5	1.0	18	30	44	
2N1026A	PNP	.012	4.5	1.0	36	60	88	
2N1027	PNP	.012	4.5	1.0	18	30		
2N1028	PNP	.016	4.5	1.0	9			
2N1034	PNP	0.4	4.5	1.0	9	15	22	
2N1035	PNP	0.4	4.5	1.0	18	30	42	
2N1036	PNP	0.4	4.5	1.0	34	60	88	
2N1037	PNP	0.4	4.5	1.0	9	25	42	
2N1038	PNP	60	1.5	50		70		
2N1039	PNP	60	1.5	50		70		
2N1040	PNP	60	1.5	50		70		
2N1041	PNP	60	1.5	50		70		
2N1042	PNP	60	1.5	50		83		
2N1043	PNP	60	1.5	50		83		
2N1044	PNP	60	1.5	50		83		
2N1045	PNP	60	1.5	50		83		
2N1047	NPN	6	4.5	30		15		
2N1048	NPN	6	4.5	30		15		
2N1049	NPN	6	4.5	30		25		
2N1050	NPN	6	4.5	30		25		
2N1051	NPN	.04	4.5	5.0	30		100	Note 1
2N1054	NPN	1	4.5	20		35		
2N1056	PNP	6	4.5	1.0		25		
2N1057	PNP	5	1.5	20		60		
2N1058	NPN	25	4.5	1.0	10	25		Note 4
2N1059	NPN	16	1.5	35		75		
2N1060	NPN	0.1	0.3	3.0		15		
2N1065	PNP	5	4.5	1.0		25		
2N1066	PNP	7	4.5	1.5		60		
2N1072	NPN	0.1	4.5	1.0		40		
2N1074	NPN	0.4	4.5	5.0	9	15	22	
2N1075	NPN	0.4	4.5	5.0	18	28	44	
2N1076	NPN	0.4	4.5	5.0	36	60	88	
2N1077	NPN	0.4	4.5	5.0	9	25	44	
2N1086	NPN	3	1.5	1.0		40		
2N1086A	NPN	3	1.5	1.0		40		

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N1087	NPN	3	1.5	1.0		40		
2N1090	NPN	5	1.5	20		50		
2N1091	NPN	5	1.5	20		50		
2N1095	NPN	1.5	4.5	5.0	9	49		
2N1096	NPN	1.5	4.5	5.0	9	24		
2N1097	PNP	8	4.5	1.0		55		
2N1098	PNP	8	4.5	1.0		45		
2N1101	NPN	25	4.5	1.0	20			
2N1102	NPN	16	4.5	1.0	20			
2N1107	PNP	6	4.5	0.5		50		
2N1108	PNP	6	4.5	0.5		45		
2N1109	PNP	6	4.5	0.5		10		
2N1110	PNP	6	4.5	0.5		28		
2N1111	PNP	6	4.5	0.5		18		
2N1111A	PNP	6	4.5	0.5		28		
2N1111B	PNP	6	4.5	0.5		28		
2N1114	NPN	12	1.5	20	40		180	
2N1115	PNP	3	1.5	10		50		Note 4
2N1118	PNP	0.4	4.5	1.0	9	20		
2N1119	PNP	.06	1.5	10		16		
2N1121	NPN	0.5	1.5	1.0	32	72		Note 6
2N1122	PNP	5	3.0	1.0	35			
2N1122A	PNP	5	3.0	1.0	35			
2N1123	PNP	5	4.5	3.0		80		Note 7
2N1124	PNP	30	4.5	10	40	100		
2N1125	PNP	25	1.5	10		150		
2N1126	PNP	30	4.5	10	40			
2N1128	PNP	14	4.5	2.0	70	120	150	
2N1129	PNP	10	4.5	10		190		
2N1130	PNP	10	4.5	10		130		
2N1131	PNP	0.4	1.5	50		30		
2N1132	PNP	0.4	1.5	50		60		
2N1139	NPN	2.5	4.5	10		40		
2N1140	NPN	15	4.5	1.0	20			
2N1141	PNP	3	4.5	10		49		
2N1142	PNP	3	4.5	10		49		
2N1143	PNP	3	4.5	10		49		
2N1144	PNP	8	4.5	1.0		55		
2N1145	PNP	8	4.5	1.0		45		
2N1149	NPN	0.8	4.5	1.0	9	13	20	
2N1150	NPN	0.8	4.5	1.0	18	24	40	
2N1151	NPN	0.8	4.5	1.0	18	39	90	
2N1152	NPN	0.8	4.5	1.0	36	49	90	
2N1153	NPN	0.8	4.5	1.0	76	99		
2N1154	NPN	1.5	4.5	5.0	9	15		
2N1155	NPN	1	4.5	5.0	9	15		
2N1156	NPN	1.5	4.5	5.0	9	15		
2N1158	PNP	3	4.5	3.0	5	50		
2N1158A	PNP	3	4.5	3.0	8	50		
2N1169	NPN	6	1.5	50		40		
2N1170	NPN	5	1.5	50		40		
2N1171	PNP	3	1.5	50		50		
2N1175	PNP	5	4.5	1.0	60	80	120	
2N1175A	PNP	5	4.5	1.0	60	80	120	

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N1176	PNP	16	4.5	10	20			
2N1176A	PNP	12	4.5	10	20			
2N1176B	PNP	12	4.5	10	20			
2N1177	PNP	7	4.5	1.0		90		
2N1178	PNP	7	4.5	1.0		35		
2N1179	PNP	7	4.5	1.0		70		
2N1180	PNP	7	4.5	1.0		70		
2N1191	PNP	6	4.5	1.0	30	40	70	
2N1192	PNP	6	4.5	1.0	50	75	125	
2N1193	PNP	6	4.5	1.0	100	160		
2N1195	PNP	2.5	4.5	10	26	49	200	
2N1196	PNP	.12	4.5	2.0	6	10		
2N1197	PNP	.12	4.5	2.0	6	10		
2N1198	NPN	0.8	4.5	1.0	20	66	200	
2N1199, A	NPN	0.4	4.5	10		35		
2N1204	PNP	7	4.5	10		150		
2N1205	NPN	.25	4.5	2.0	10			
2N1206	NPN	5	4.5	10	20	35	50	
2N1207	NPN	5	4.5	10	30	50	90	
2N1217	NPN	0.8	1.5	2.0		60		
2N1218	NPN	100	1.5	100	40		160	Note 7
2N1219	PNP	.07	1.5	5.0	18			
2N1220	PNP	.07	1.5	5.0	9			
2N1221	PNP	.07	4.5	1.0	18			
2N1222	PNP	.07	4.5	1.0	9			
2N1223	PNP	.07	4.5	1.0	6	10		
2N1224	PNP	7	4.5	1.5		60		
2N1225	PNP	7	4.5	1.5		60		
2N1226	PNP	7	4.5	1.5		60		
2N1228	PNP	.06	4.5	1.0	14		32	
2N1229	PNP	.06	4.5	1.0	28		65	
2N1230	PNP	.04	4.5	1.0	14		32	
2N1231	PNP	.04	4.5	1.0	28		65	
2N1232	PNP	.03	4.5	1.0	14		32	
2N1233	PNP	.03	4.5	1.0	28		65	
2N1234	PNP	.02	4.5	1.0	14		32	
2N1238	PNP	.06	4.5	1.0	14		32	
2N1239	PNP	.06	4.5	1.0	28		65	
2N1240	PNP	.04	4.5	1.0	14		32	
2N1241	PNP	.04	4.5	1.0	28		65	
2N1242	PNP	.03	4.5	1.0	14		32	
2N1243	PNP	.03	4.5	1.0	28		65	
2N1244	PNP	.02	4.5	1.0	14		32	
2N1247	NPN	.005	3.0	0.1		70		
2N1248	NPN	.01	3.0	0.1		38		
2N1251	NPN	25	4.5	1.0	70	150	250	
2N1252	NPN	5	4.5	50		35		
2N1253	NPN	5	4.5	50		70		
2N1254	PNP	0.1	4.5	2.0		10		
2N1255	PNP	0.1	4.5	2.0		40		
2N1256	PNP	.08	4.5	2.0		10		
2N1257	PNP	.08	4.5	2.0		40		
2N1258	PNP	.06	4.5	2.0		10		
2N1259	PNP	.06	4.5	2.0		40		

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N1264	PNP	25	4.5	1.5	15			Note 4 Note 4
2N1265	PNP	70	4.5	1.0		50		
2N1266	PNP	70	4.5	1.0	10	48		
2N1267	NPN	0.4	4.5	2.0	5	10	16	
2N1268	NPN	0.4	4.5	2.0	10	18	32	
2N1269	NPN	0.4	4.5	2.0	25	44	80	
2N1270	NPN	0.4	4.5	2.0	5	10	16	
2N1271	NPN	0.4	4.5	2.0	10	18	32	
2N1272	NPN	0.4	4.5	2.0	25	44	80	
2N1273	PNP	8	1.5	50		50		
2N1274	PNP	8	1.5	50		50		
2N1275	PNP	0.3	4.5	1.0		14		
2N1276	NPN	0.4	4.5	1.0	9	14	22	
2N1277	NPN	0.4	4.5	1.0	18	33	44	
2N1278	NPN	0.4	4.5	1.0	37	66	90	
2N1279	NPN	0.4	4.5	1.0	76	101	333	
2N1280	PNP	7	1.5	20		60		
2N1281	PNP	7	1.5	20		90		
2N1282	PNP	7	1.5	20		100		
2N1284	PNP	2.5	1.5	10	30	90	150	
2N1285	PNP	7	4.5	1.5	30		100	
2N1288	NPN	5	1.5	10		150		
2N1289	NPN	3	1.5	25		130		
2N1299	NPN	4	1.5	50	35		110	
2N1300	PNP	3	1.5	10		65		
2N1301	PNP	3	1.5	10		65		
2N1302	NPN	2.5	1.5	10		50		
2N1303	PNP	2.5	1.5	10		50		
2N1304	NPN	2.5	1.5	10		70		
2N1305	PNP	2.5	1.5	10		70		
2N1306	NPN	2.5	1.5	10		100		
2N1307	PNP	2.5	1.5	10		100		
2N1308	NPN	2.5	1.5	10		150		
2N1309	PNP	2.5	1.5	10		150		
2N1310	NPN	7	4.5	1.0		35		
2N1311	NPN	7	4.5	1.0		30		
2N1312	NPN	7	4.5	1.0		40		
2N1316	PNP	3	1.5	10		50		
2N1317	PNP	4	1.5	10		50		
2N1318	PNP	5	1.5	10		50		
2N1335	NPN	1	4.5	30		10		
2N1336	NPN	1	4.5	30		10		
2N1337	NPN	1	4.5	30		10		
2N1338	NPN	1	4.5	30		10		
2N1339	NPN	1	4.5	30		10		
2N1340	NPN	1	4.5	30		10		
2N1341	NPN	1	4.5	30		10		
2N1343	PNP	3	1.5	50		25		
2N1344	PNP	5	1.5	20		90		
2N1347	PNP	4	1.5	10		80		
2N1349	PNP	6	1.5	10		115		
2N1350	PNP	8	1.5	10		95		
2N1351	PNP	6	1.5	10		65		
2N1352	PNP	2	4.5	1.0		70		

Transistor	Type	Max. I _{cho} μ a	V _{ce}	I _c ma	Beta			Notes
					Min.	Typ.	Max.	
2N1353	PNP	4	1.5	10		70		
2N1354	PNP	4	1.5	10		70		
2N1355	PNP	4	1.5	10		80		
2N1356	PNP	3	1.5	10		80		
2N1357	PNP	4	1.5	10		85		
2N1370	PNP	3	1.5	50		80		Notes 6, 7
2N1371	PNP	3	1.5	50		80		Notes 6, 7
2N1372	PNP	3	4.5	1.0		45		Notes 6, 7
2N1373	PNP	3	4.5	1.0		45		Notes 6, 7
2N1374	PNP	3	4.5	1.0		70		Notes 6, 7
2N1375	PNP	3	4.5	1.0		70		Notes 6, 7
2N1376	PNP	3	4.5	1.0		95		Notes 6, 7
2N1377	PNP	3	4.5	1.0		95		Notes 6, 7
2N1378	PNP	7	4.5	1.0		200		Notes 6, 7
2N1379	PNP	5	4.5	1.0		200		Notes 6, 7
2N1380	PNP	7	4.5	1.0		100		Notes 6, 7
2N1381	PNP	5	4.5	1.0		100		Notes 6, 7
2N1382	PNP	7	4.5	1.0		80		
2N1383	PNP	7	4.5	1.0		50		
2N1384	PNP	10	1.5	100		60		Note 8
2N1386	NPN	0.1	4.5	10		45		
2N1387	NPN	0.1	4.5	10		30		
2N1388	NPN	.25	4.5	1.0		15		
2N1389	NPN	.25	4.5	1.0		15		
2N1390	NPN	0.8	4.5	1.0		15		
2N1395	PNP	7	4.5	1.5		90		
2N1396	PNP	7	4.5	1.5		90		
2N1397	PNP	7	4.5	1.5		90		
2N1405	PNP	3	4.5	2.0	10			
2N1406	PNP	3	4.5	2.0	10			
2N1407	PNP	3	4.5	2.0	10			
2N1408	PNP	7	4.5	1.0	10	25		
2N1409	NPN	5	4.5	100		30		
2N1410	NPN	5	4.5	100		30		
2N1413	PNP	5	4.5	1.0	20	30	41	
2N1414	PNP	5	4.5	1.0	30	44	64	
2N1415	PNP	5	4.5	1.0	44	64	88	
2N1416	PNP	Pair of 2N223 with Beta matched to within 20%						
2N1417	NPN	0.5	4.5	1.0	30	60	200	
2N1418	NPN	4	4.5	1.0	30	60	200	
2N1425	PNP	7	4.5	1.0		45		
2N1426	PNP	7	4.5	1.0		120		
2N1428	PNP	0.1	3.0	1.0	25	45		
2N1429	PNP	0.1	3.0	1.0	25	45		
2N1440	PNP	.012	4.5	1.0	9		22	
2N1441	PNP	.012	4.5	1.0	18		36	
2N1442	PNP	.012	4.5	1.0	30		65	
2N1446	PNP	4	4.5	1.0	16	30		
2N1447	PNP	4	4.5	1.0	30	45		
2N1448	PNP	4	4.5	1.0	45	65		
2N1449	PNP	4	4.5	1.0	60	80		
2N1451	PNP	3	4.5	1.0		24		
2N1452	PNP	3	4.5	1.0		49		
2N1469	PNP	.012	4.5	1.0	36	60	88	

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N1472	NPN	0.3	4.5	10		25		Note 7
2N1474	PNP	.016	4.5	1.0	12	26	44	
2N1474A	PNP	.016	4.5	1.0	18	30	44	
2N1475	PNP	.016	4.5	1.0	36	60	88	
2N1478	PNP	5	4.5	3.0		70		
2N1479	NPN	4	4.5	5.0		50		
2N1480	NPN	4	4.5	5.0		50		
2N1481	NPN	4	4.5	5.0		50		
2N1482	NPN	4	4.5	5.0		50		
2N1491	NPN	6	4.5	15		50		
2N1492	NPN	6	4.5	15		50		
2N1493	NPN	6	4.5	15		50		
2N1494	PNP	7	4.5	10		150		
2N1499A	PNP	3	1.5	10		75		
2N1500	PNP	5	1.5	10		90		
2N1507	NPN	0.4	4.5	50		150		
2N1510	NPN	2	1.5	1.0		30		
2N1515	PNP	13	4.5	1.0	20	100		
2N1516	PNP	13	4.5	1.0	20	100		
2N1517	PNP	13	4.5	1.0	20	100		
2N1524	PNP	10	4.5	1.0		55		
2N1525	PNP	10	4.5	1.0		55		
2N1526	PNP	10	4.5	1.0		115		
2N1527	PNP	10	4.5	1.0		115		
2N1528	NPN	1	4.5	1.0	10		100	
2N1564	NPN	0.3	4.5	5.0	20		50	
2N1565	NPN	0.3	4.5	5.0	40		100	
2N1566	NPN	0.3	4.5	5.0	80		200	
2N1572	NPN	0.3	4.5	5.0	20		50	Note 7 Note 7
2N1573	NPN	0.3	4.5	5.0	40		100	
2N1574	NPN	0.3	4.5	5.0	80		200	
2N1605	NPN	3	1.5	24		24		
2N1609	PNP	25	4.5	100		45		
2N1610	PNP	25	4.5	100		55		
2N1611	PNP	30	4.5	100		45		
2N1612	PNP	30	4.5	100		55		
2N1613	NPN	.003	4.5	1.0	30		100	
2N1614	PNP	6	4.5	1.0		25		
2N1623	PNP	0.4	4.5	1.0		14		
2N1631	PNP	10	4.5	1.0		70		
2N1632	PNP	10	4.5	1.0		70		
2N1633	PNP	10	4.5	1.0		65		
2N1634	PNP	10	4.5	1.0		65		
2N1635	PNP	10	4.5	1.0		65		
2N1636	PNP	10	4.5	1.0		65		
2N1637	PNP	3	4.5	1.0		70		
2N1638	PNP	4	4.5	1.0		65		
2N1639	PNP	4	4.5	1.0		65		
2N1654	PNP	0.3	4.5	1.0		14		
2N1655	PNP	.25	4.5	1.0		14		
2N1656	PNP	.25	4.5	1.0		14		
2N1658	PNP	25	4.5	100		60		
2N1659	PNP	25	4.5	100		60		
2N1663	NPN	0.4	4.5	10		60		
2N1676	PNP	0.1	3.0	1.0		50		

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
2N1677	PNP	0.1	3.0	1.0	25	50		
2N1678	PNP	3	1.5	20		40		
2N1683	PNP	3	1.5	10		75		
2N1705	PNP	7	4.5	1.0	70	110	150	
2N1706	PNP	4	4.5	10		90		
2N1707	PNP	6	4.5	10	40		150	
2N1711	NPN	.003	4.5	1.0	50		200	
2N1714	NPN	0.7	4.5	10	10			Note 1
2N1715	NPN	0.7	4.5	10	10			Note 1
2N1716	NPN	0.7	4.5	10	20			Note 1
2N1717	NPN	0.7	4.5	10	20			Note 1
2N1718	NPN	0.7	4.5	10	10			Note 1
2N1719	NPN	0.7	4.5	10	10			Note 1
2N1720	NPN	0.7	4.5	10	20			Note 1
2N1721	NPN	0.7	4.5	10	20			Note 1
2N1742	PNP	6	4.5	2.0		30		
2N1743	PNP	6	4.5	2.0		30		
2N1744	PNP	6	4.5	2.0		30		
2N1745	PNP	6	4.5	2.0		30		
2N1748	PNP	6	4.5	1.0	30	45	150	
2N1748A	PNP	6	4.5	1.0	50	70	150	
2N1749	PNP	6	4.5	1.0	30	45	150	
2N1750	PNP	2	3.0	0.5		30		Note 7
2N1752	PNP	6	4.5	1.0	50	250	300	
2N1754	PNP	5	1.5	10		70		
2N1868	PNP	6	4.5	2.0		30		
2N1917	PNP	.0025	4.5	1.0	25	50		
2N1918	PNP	.0025	4.5	1.0	25	50		
2N1960	PNP	3	1.5	10	25			
2N1961	PNP	3	1.5	10	20			
2N1962	NPN	.10	15	10	20		60	
2N1963	NPN	.10	1.5	10	25			
2T64	NPN	15	1.5	10		100		
2T65	NPN	15	4.5	1.0	25	43	70	
2T66	NPN	15	1.5	10		25		
2T69	NPN	10	1.5	10		50		
2T73	NPN	8	4.5	1.0	26	41	82	
2T78	NPN	2	4.5	1.0	32	49	66	
2T201	PNP	8	4.5	1.0	9	24	82	
2T204	PNP	8	4.5	1.0		49		
2T205	PNP	8	4.5	1.0	32	49	66	
2T205A	PNP	2	4.5	1.0	32	49	66	
2T681	NPN	10	4.5	1.0	32	42	55	
2T682	NPN	10	4.5	1.0	32	42	55	
3N25	PNP	20	4.5	0.5		65		Note 5
3N34	NPN	0.4	4.5	1.0		20		Note 5
3N35	NPN	0.4	4.5	1.0		20		Note 5
3N36	NPN	10	4.5	1.0	9	100		Note 5
3N37	NPN	10	4.5	1.0	13	100		Note 5
320	PNP	6	4.5	1.0		125		
3609	NPN	10	4.5	1.0		32		
CK4, A	PNP	3	1.5	12		30		
CK13	PNP	3	4.5	1.0		30		
CK13A	PNP	3	4.5	1.0		30		

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
CK14	PNP	3	4.5	1.0		60		
CK14A	PNP	3	4.5	1.0		60		
CK16	PNP	3	4.5	1.0		80		
CK16A	PNP	3	4.5	1.0		80		
CK17	PNP	3	4.5	1.0		140		
CK17A	PNP	3	4.5	1.0		140		
CK22	PNP	2.5	4.5	1.0	54	90	132	
CK22A	PNP	2.5	4.5	1.0	54	90	132	
CK25, A	PNP	4	1.5	30		30		Note 7
CK26, A	PNP	4	1.5	40		40		Note 7
CK27, A	PNP	4	1.5	2.0		80		Note 7
CK28, A	PNP	4	1.5	4.0		100		Note 7
CK64	PNP	2.5	4.5	1.0	13	25	45	
CK64A	PNP	2.5	4.5	1.0	13	25	45	
CK65	PNP	2.5	4.5	1.0	27	45	66	
CK65A	PNP	2.5	4.5	1.0	27	45	66	
CK66	PNP	2.5	4.5	1.0	54	90	132	
CK66A	PNP	2.5	4.5	1.0	54	90	132	
CK67	PNP	2.5	4.5	1.0	108	180		
CK67A	PNP	2.5	4.5	1.0	108	180		
CK83	PNP	6	4.5	1.0		60		
CK86	PNP	6	4.5	1.0		200		
CK721	PNP	30	4.5	1.0		45		
CK722	PNP	30	4.5	1.0		22		
CK790	PNP	.09	4.5	1.0	9	14	19	
CK791	PNP	.09	4.5	1.0	18	24	36	
CK793	PNP	.09	4.5	1.0	9	16	36	
CK942	PNP	0.4	4.5	1.0		14		
GET103	PNP	15	4.5	1.0		55		
GET104	PNP	15	1.5	0.5		50		
GET106	PNP	15	4.5	1.0		60		
GET114	PNP	15	4.5	1.0		55		
GET873	PNP	3	4.5	1.0		35		
GET874	PNP	3	4.5	1.0		40		
GFT20	PNP	20	3.0	1.0		33		
GFT20R	PNP	20	3.0	1.0		33		
GFT20/30	PNP	20	3.0	1.0		33		
GFT20/60	PNP	20	3.0	1.0		33		
GFT21	PNP	20	3.0	3.0		90		
GFT21R	PNP	20	3.0	3.0		90		
GFT21/30	PNP	20	3.0	3.0		90		
GFT21/60	PNP	20	3.0	3.0		90		
GFT22	PNP	20	3.0	5.0		150		
GFT22R	PNP	20	3.0	5.0		150		
GFT22/30	PNP	20	3.0	5.0		150		
GFT22/60	PNP	20	3.0	5.0		150		
GFT25	PNP	20	3.0	2.0		50		
GFT25R	PNP	20	3.0	2.0		50		
GFT25/30	PNP	20	3.0	2.0		50		
GFT25/60	PNP	20	3.0	2.0		50		
GT14	PNP	15	4.5	1.0	20	28	34	
GT20	PNP	15	4.5	1.0	35	45		
GT34	PNP	15	4.5	1.0	10	15	19	
GT34HV	PNP	7	4.5	1.0	10	25		
GT34S	PNP	15	4.5	1.0	10	15	19	

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
GT74	PNP	10	4.5	1.0	50		99	
GT75	PNP	6	4.5	1.0		150		
GT81	PNP	10	4.5	1.0	50	75	100	
GT81HS	PNP	10	4.5	1.0		100		
GT82	PNP	6	4.5	1.0		150		
GT83	PNP	15	4.5	1.0	35	45		
GT87	PNP	15	4.5	1.0	20	28	34	
GT88	PNP	10	4.5	1.0	50	65		
GT109	PNP	10	4.5	1.0	80	100	140	
GT122	PNP	10	4.5	1.0	50	65		
GT123	PNP	6	4.5	1.0	30			
GT222	PNP	20	4.5	1.0		20		
GT229	NPN	20	4.5	1.0		20		
GT758	PNP	6	4.5	1.0		15		
GT759	PNP	6	4.5	1.0		20		
GT759R	PNP	10	4.5	1.0		25		
GT760	PNP	1	4.5	1.0		40		
GT760R	PNP	10	4.5	1.0		40		
GT761	PNP	1	4.5	1.0		75		
GT761R	PNP	10	4.5	1.0		70		
GT762	PNP	1	4.5	1.0		150		
GT762R	PNP	10	4.5	1.0		120		
GT763	PNP	1	4.5	1.0		120		
GT792R	NPN	10	4.5	1.0		60		
GT905	NPN	6	4.5	1.0		40		
GT905R	NPN	10	4.5	1.0		40		
GT947	NPN	6	4.5	1.0		40		
GT948R	NPN	6	4.5	1.0		40		
GT949	NPN	6	4.5	1.0		100		
GT949R	NPN	10	4.5	1.0	40		160	
GT1200	NPN	7	4.5	1.0		35		
OC44	PNP	0.5	4.5	1.0	45	100		Notes 6, 7
OC45	PNP	0.5	4.5	1.0	25	50	125	Notes 6, 7
OC53	PNP	1.5	1.5	.25	20	35		Notes 6, 7
OC54	PNP	1.5	1.5	.25	30	55		Notes 6, 7
OC55	PNP	1.5	1.5	.25	50	80		Notes 6, 7
OC56	PNP	1.5	1.5	2.0		75		Notes 6, 7
OC57	PNP	1.5	1.5	.25	20	35		Notes 6, 7
OC58	PNP	1.5	1.5	.25	30	55		Notes 6, 7
OC59	PNP	1.5	1.5	.25	50	80		Notes 6, 7
OC65	PNP	12	1.5	0.5		30		
OC66	PNP	12	1.5	3.0		47		
OC169	PNP	13	4.5	1.0	20	100		
OC170	PNP	13	4.5	1.0	20	100		
OC171	PNP	13	4.5	1.0	20	100		
SB100	PNP	0.5	3.0	0.5		20		
SFT106	PNP	10	4.5	1.0		35		
SFT107	PNP	10	4.5	1.0		55		
SFT108	PNP	10	4.5	1.0		100		
ST9	NPN	0.5	4.5	1.0	30	60	200	
ST15	NPN	.005	4.5	1.0	10	50	100	
ST29	NPN	4	4.5	1.0	30	60	200	
ST35	NPN	.005	4.5	1.0	10	50	100	
ST45	NPN	.005	4.5	1.0	10	50	100	
ST903	NPN	1	4.5	1.0	9	16	20	

Transistor	Type	Max. Icbo μ a	Vce	Ic ma	Beta			Notes
					Min.	Typ.	Max.	
ST904	NPN	1	4.5	1.0	18	31	40	
ST904A	NPN	1	4.5	1.0	18	60	90	
ST905	NPN	1	4.5	1.0	36	65	90	
ST910	NPN	1	4.5	1.0	76	140		
ST3031	NPN	0.5	4.5	1.0	40	60		
T1000	PNP	20	4.5	2.0		65		
T1001	PNP	20	4.5	2.0		95		
TF65	PNP	5	1.5	2.0		45		
TF65/30	PNP	5	1.5	2.0		45		
TR526	PNP	10	4.5	1.0		64		
TR527	PNP	10	4.5	1.0		81		
TR721	PNP	20	4.5	1.0	40		150	
TR722	PNP	20	4.5	1.0	15		45	
TR-C44	PNP	10	4.5	1.0		100		
TR-C45	PNP	10	4.5	1.0		50		
TR-C70	PNP	10	1.5	0.5		30		
TR-C71	PNP	10	1.5	3.0		47		
TS627	PNP	10	4.5	10		90		
TS629	PNP	15	4.5	10	40		150	
TS1007	PNP	10	4.5	1.0	70	110	150	
XA101	PNP	5	4.5	1.0		35		
XA102	PNP	5	4.5	1.0		60		
XA103	PNP	5	4.5	1.0		35		
XA104	PNP	5	4.5	1.0		60		
XA124	PNP	20	4.5	1.0		55		
XB102	PNP	10	4.5	1.0		30		
XB103	PNP	10	4.5	1.0		66		
XB104	PNP	10	4.5	1.0		30		

$$\begin{array}{r} 2.5 \\ 1.5 \\ \hline 1.25 \end{array}$$

$$\begin{array}{r} .5 \\ 1.75 \end{array}$$

$$\begin{array}{r} 4.15 \\ 3.50 \\ \hline 1.25 \end{array}$$